

## **ASSESSMENT OF INNOVATION AND INNOVATION RISK ON A LOCAL REAL ESTATE MARKET IN THE CONTEXT OF THE NATIONAL MARKET**

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### **Abstract**

The paper includes the main problems concerning implementation of innovations in the real estate market and the risk involved. A short overview of the types of innovations, their forms in the real estate market and also the risk involved was presented. The aim of the work is to evaluate the innovation on the local real estate market in relation to the national market and to analyze the risk of innovative activity of this market. The study proposed the hypothesis that the given state of the development of the real estate market corresponds to the average level of market risk associated with this field. For the purposes of evaluating innovation and the investment risk of innovative activity, questionnaire surveys assessing the significance of innovation for the examined market have been carried out. The respondents expressed their opinion about the level of innovation risk in this market. In addition, secondary data - concerning the entire national market - were used in the work. The results regarding the implementation of innovations, their types, barriers to their perception on the local and national market were presented as well as the main benefits resulting from their application. The risk characterization and classification of its sources were also presented. Analysis of the results indicated that the main priorities of the construction industry are similar for both markets. Minor differences are due in particular to the underdeveloped local market. It was found that the particularly high contribution to the risk level resulted from market risk. The analyzed situation therefore requires a change in the approach to real estate management, especially to minimize the risk.

**Key words:** innovation, innovation activity, local housing market, national market

### **Introduction**

Innovativeness is considered in the literature as a key success driver that determines competitive advantage of enterprises in the market (POMYKALSKI, 2001). This activity involves a substantial risk, which is often viewed as one of its major barriers, and the uncertainty about the final outcomes also necessitates to incur considerable expenditures (ŚWITALSKI, 2005). Therefore, it can be concluded that high level of risk is a characteristic feature of the innovative processes (JONEK-KOWALSKA, 2011). With the intensifying processes of globalization and accelerated economic growth caused by the increased competitiveness (with its major driver being innovativeness), the main problem of the economic success is to evaluate the risk of innovative activities across the entire economy.

In 2007, the European Commission (EC) promoted the development of innovation-based European economy as a measure to reinforce its competitiveness in the global market. For this purpose, the EC started the lead market initiative (LMI) to implement the innovation-based strategy (KOM, 2007). These activities were collected into a single package called Lead Market Initiative for Europe. Six markets were enumerated in the initial phase of the initiative. These are protective textile products, construction consistent with the principles of sustainable building, recycling, products of biological origin and renewable energies. One of these markets is sustainable building as a market with innovative potential, conducive to competitiveness and creation of new workplaces in the European economy.

The aim of the work is to evaluate the innovation on the local real estate market in relation to the national market and to analyze the risk of innovative activity of this market. The study proposed the hypothesis that the given state of the development of the real estate market corresponds to the average level of market risk associated with this field.

## Methodology

The data used to achieve the study aim and support the adopted thesis were derived in 2016 from the results of the survey conducted among the entities operating in the Częstochowa local real estate market. The survey was aimed at developers operating in this market. In total, 16 enterprises responded, with the study sample of 50 people. The enterprises studied were all small and medium-sized enterprises according to the classification of the Central Statistical Office of Poland, operating in the market for ca. 10 to 15 years, with their area of activity focused on the local real estate market of the city of Częstochowa, Poland. The respondents expressed their opinions about innovative activities in their own enterprises and evaluated risks involved in innovativeness.

Availability of information about real estate is of key importance during risk analysis and the choice of the strategy to limit a specific risk. Although all identifiable databases do not meet the condition of completeness of information needed for market examination, the study used also secondary (existing) information regarding real estate market, using the method of analysis of these data.

The causes that determine the use of other surveys, especially the existing information (secondary data), result from the necessity (in this case) of the diagnosis concerning the development of the factors that impact on the risk connected with implementation of innovations in the local market in the context of the national market. The study used secondary information concerning the real estate market using the method of data analysis.

The study used the results of the surveys ordered by PARP (2013), the aim of which was to acquire and provide knowledge on the possibilities of enterprises in the development of research and development activities and the needs of entrepreneurs in supporting research and development. Part of the data were derived from the secondary GUS resources data, survey results of the real estate market, and from the research resources of MCKINSEY & COMPANY (2015).

Part of the research was obtained from the secondary GUS resources data, survey results of the real estate market, and from the research resources of MCKINSEY (2015). Furthermore, the analysis of the research and secondary information allowed for the achievement of the study aim and supporting the proposed thesis.

## Results and Discussion

The increase in the importance of innovations in the economic processes is also noticeable in the contemporary real estate market, which substantially utilizes innovative solutions used by both entities and parties of transactions in this sector. Depending on the activities conducted by businesses in the real estate market, the grouping of innovations according to PRYSTOM (2012) and BRZEZIŃSKI (2001) criteria were presented as groups of innovations in the real estate market and their characteristics:

- main innovations (PUJARI,2006), (PERES, 2010) as technical and technological. They concern modern solutions used in the construction activities, starting from the stage of design and project execution through to the measuring of the building and its use,
- process (JAIKUMAR,1986) and organizational (PIVO, FISHER, 2010), (LEE et al., 2012) innovations. They are connected with implementation of technological innovations, legal changes and their adjustment to the needs and requirements of the contemporary customers in the real estate market,
- marketing innovations. They concern the sales and distribution of products and services in the real estate market and involve networking and new methods of presentation of real estate offers,
- financial innovations. They allow entities in the real estate market to start investments through application of modern financial instruments based on the real estate market (derivatives, covered bonds, reverse mortgage, energy-efficient mortgage, bancassurance, and new insurance products, dedicated to specific entities in the real estate market).

The condition of housing in Poland reflected by housing resources on the domestic market and values of indices that reflect the mean number of rooms in a flat, number of people per flat and per room and usable floor area per person is presented in table. 1 and table 2.

Table 1 shows that there were 6071,5 thousand flats in 2016 in buildings which were subjected to management/administration. Among them, 47.7% were flats of natural persons in buildings included in housing associations, 34.2% were property of housing cooperatives, 14.3% - municipal flats, 1.6% - social building associations, 1.3% - company flats, 0.5% - the State Treasury, and 0.4% - flats owned by other entities. These data clearly point to the fact that contribution of a cheap flats in social building associations (TBS), in both cooperative and municipal housing, accounts for ca. 50% of flats in buildings under management or administration and 20% of housing resources (SITEK, 2016). Their contribution to promotion of cheap construction is rather insignificant, leading to the necessity of using effective

development projects. In addition, it seems that the innovative solutions are unlikely to apply to this type of construction.

**Table 1.** Housing resources in Poland according to forms of property (2016).

Specification	Flats	Floor area, m <sup>2</sup>
TOTAL	14,272,010	1,053,251,803
<i>Property:</i>		
Housing cooperatives	2,073,935	102,336,104
Gminas (municipal)	868,517	38,306,151
Company	79,308	4,564,658
State Treasury	29,127	1,473,620
Social building associations	98,221	4,843,218
<i>Natural persons:</i>		
In housing associations	2,896,622	151,532,068
Apart from associations	8,200,535	748,761,778

Source: Own study based on the data from GUS (2017a, pp. 328-333), GUS, (2017b, pp. 18-19).

**Table 2.** Housing conditions in Poland.

Mean indices of:	2005	2010	2015	2016
Number of rooms per flat	3.69	3.81	3.82	3.82
Number of people per flat	2.99	2.86	2.72	2.69
Number of people per room	0.81	0.75	0.71	0.70
Usable floor area per person [m <sup>2</sup> ]	23.2	25.3	27.0	27.4

Source: Own study based on the data from GUS (2017a), GUS (2017b).

Analysis of housing conditions in Poland in 2005-2016 (table 2) indicates the substantial increase in the number of flats, rooms in a flat and reduction in the number of persons per room. This tendency was caused, among other things, by new investments in housing, extension and reconstruction of current buildings and changes in the character and purpose of non-housing floor areas.

The increase in the importance of innovations in the economic processes is noticeable in the contemporary real estate market, which substantially utilizes innovative solutions used by both entities and parties of transactions in this sector. Analysis of secondary data concerning indices of innovative activity of micro-enterprises operating in the national market, their contribution, implementations and innovative activity, especially in the construction sector and services for the real estate market are presented in Table 3.

The results of the study showed that product, process and organizational innovations in the national market were implemented in the period of 2011-2013 by ca. 20% microenterprises, whereas marketing innovations were implemented by only 10.4% microenterprises. The share of revenues on sales of new or significantly improved products implemented in the market in 2011-2013 in the construction sector was 2.7%, whereas in the activities connected with the real estate market - only 1.8%. Furthermore, innovative activity of enterprises in the construction sector and services for real estate market indicates a relatively intensive activity in the real estate market, which is manifested in the effects of their implementation in this market (SIPA, SMOLAREK, 2015).

The situation in the local real estate market in Częstochowa is defined by the supply of flats, housing services and products according to the surface area and number of rooms, transaction prices and rent prices. However, the quantitative data collected during the analysis of a local market will not have such a high value as qualitative data collected either from surveys or from interviews (PECA, 2009). Quantitative data concerning the initial analysis of the local market were presented in table 4.

As results from Table 4, housing resources for the local market in Częstochowa 2016 amounted to 98740 flats. Mean surface area 62 m<sup>2</sup>, whereas surface area per 1 person was 27 m<sup>2</sup>. There were 361 flats per 1000 peoples.

Comparison of the data concerning the national market (Table 1 and Table 2) with the data that characterize local market (Table 4) reveals that:

- housing resources of the local market account for merely 0.7% of the national market resources,
- number of rooms per flat and number of people (persons) per 1 flat in the local market compared to the national market accounts for 85%,

- number of people per room and usable floor areas per 1 person in the local market compared to the national market accounts for 97%,

The comparison shows that local market, which is very small compared to the national market, with very small housing resources compared to the national market but unused opportunities for economic development (Częstochowa is part of the Katowice Special Economic Zone), is a market with potential that is conducive to competitiveness (SKIBIŃSKI, 2017).

**Table 3.** Results of the study obtained in the project of support for cohesion policy in the financial of 2007-2013 and 2014-2020 (Polish market).

Activity of microenterprises	Innovations in (%)		Activity according to the Division of Economic Activities (PKD) (%)	
	Contribution	Implementation	Section F - the construction sector	Section L – services for r.e. market
Product innovations		18.5	16.4	11.7
Process innovations	19.9		18.3	17.6
Organizational innovations	20.8		17.0	15.6
Marketing innovations		10.4	10.0	11.0
Effects of implementation of innovations in micro-enterprises				
Effect indices	Total in (%)	Percentage in sections (%)		
		Section F - the construction sector	Section L – services for r.e. market	
Incomes on sales of innovative products	4.2	2.7	1.8	
Cooperation of micro-enterprises within innovative activities	5.9	4.5	6.3	
Public support for innovative activity of microenterprises	7.5	9.7	6.6	

Source: Own study based on the data from GUS (2007-2013c).

**Tabela 4.** Residential resources and conditions as well as market prices of real estate in Czestochowa in 2016.

Housing resources (status as of 31 December 2016)	Surface area of the flat	Surface area per person	Number of rooms in the flat	Persons per 1 flat 1 room		
				Cooperative	Developer	Individual
98740	62.2	27.1	3.35	2.29 0.68		
A flat build according to the forms of construction	Cooperative	Developer	Individual	Surface area in m <sup>2</sup>		
363	24 (6.1%)	144(39.6%)	195 (53.7%)	1322	9368	35081
Market prices of real estate per(PLN/ m <sup>2</sup> )	Flats		Houses		Land	
Częstochowa	3334		2822		98	
Katowice	3896		3528		141	
Mean prices of rent (in PLN)	889.23		1096.31		1465.38	
surface area/number of rooms	35 m <sup>2</sup>	1 room	52 m <sup>2</sup>	2 rooms	69 m <sup>2</sup>	3 rooms

Sources: URZĄD STATYSTYCZNY (2017), PAP (2017).

The data presented in Table 4 reveal that initial qualitative analysis of the local real estate market did not allow for evaluation of the perspectives of the development of sustainable housing investments. Therefore, it was used only as an inspiration for collecting the qualitative data concerning this market.

The qualitative data were obtained from a survey conducted in the entities that operated in a local estate market.

In the questionnaire survey conducted in 2016, the investors were asked about innovative activities in their enterprises and they evaluated the risk or implementation of innovations in the real estate market from the standpoint of the local market.

In the groups of questions concerning innovations in the real estate market, the investors expressed their thoughts on:

- motivation for implementation of the innovative activities,
- types of innovations implemented in the enterprises studied and their importance,

- necessity to collaborate with other entities to create and implement innovations,
- programmes for support of innovative activity,
- types of barriers and their importance.

The second group of questions concerned the risk, its measurement, using the type of specialized tools for risk measurement and evaluation of its activity and, consequently, evaluation of the future activity of the enterprise within investments.

The information concerning innovative activities differed between entrepreneurs, especially depending on the enterprise size. In small enterprises, respondents opted for implementation of innovations, with major motivations being the improvement in competitive position of the enterprise, increase in its reputation, development of the enterprise, finding new customers and financial benefits. When asked about future benefits of innovations, the respondents emphasized development of the enterprise, improved competitiveness and enhanced brand recognition. They also stressed the importance and types of innovations implemented in the enterprises and listed them according to the order of importance as technologies, products and services. The respondents demonstrated good knowledge concerning public and private support to innovative activities and emphasized complex procedures used to obtain support, insufficient capitals and human and physical resources. These factors also represent barriers to implementation of innovations.

Analysis of the survey concerning implementation of innovations in the local real estate market demonstrated benefits and barriers to innovations as a key determinant of the concept of competitiveness and balance development. The main benefits of implementation of innovations in the local real estate market and barriers to perception of innovations by enterprises in Poland in the local and national market and in the EU 28 countries is presented in Tables 5 and 6.

**Table 5.** The main benefits of sustainable – innovative construction [%].

Benefits	Local market	National market
Reduced operating cost (energy and water)	54	99
Reduced operating cost of long-term use	40	80
No impact on the environment	43	78
Certificate as an advantage	20	75
Reduced design and construction costs	50	76
Lowering the investment risk	28	57
Technology development using raw materials secondary and ecological	20	66

Source: Own study based on the survey data and the data from CONSTRUCTION (2015).

**Table 6.** Barriers perception of innovation by companies in Poland and the U28 [%].

Problem	Local market	National market	EU28
Low demand for innovative products ad services	28	49	28
Poor distribution channels	2	52	36
Lack of marketing knowledge	6	45	39
Market dominated by major competitors		78	65
Difficulties in maintaining the intellectual property laws		32	21
Administrative and legal problems	12	62	46
Finding and using new technologies	2	41	33
Costs and complexity of conference regulations and standards		80	57
No human resources	6	60	46
Lack of financial funds	50	74	60

Source: Own study based on the survey data and the data from EUROPEAN (2016).

As can be seen from table 5, the assessment of sustainable construction through the local market in the context of the domestic market has indicated that the main priorities of the construction industry are similar for both markets, as reduced operating costs, no environmental impact, maintenance costs, design and construction and the importance of pro-ecological activities. Minor differences in the importance of successive benefits are due in particular to the underdeveloped local market.

Table 6 presents the result of the research on barriers to introducing innovations perceived on the local market, presented in the context of the domestic market and compared to the average result of the EU28. The data presented in the table show that deficiency of financial funds, lack of human resources,

administrative and legal problems and the biggest barrier (dominance of leading competitors in the market) remain to be the major challenges. Therefore, it can be concluded that the state of Poland's innovativeness determines the state's competitive position in the indirect manner, pointing how far is the country behind the leader.

Furthermore, the barriers to perceiving innovations in Poland (table 2, barriers 1,3,7,10) with respect to the real estate market point to the sustainable construction, which the European Commission indicated as one of the six lead market initiatives susceptible to innovations (SITEK, 2017).

With regard to the evaluation of the risk of innovation activity, the respondents claimed that the risk is not measured by them. 64% of the respondents found that they did not measure risk using dedicated tools such as statistical measures (e.g. standard deviation, variance or covariance). Risk measurement used in these enterprises is intuitive or it results from experience and knowledge of the local market or the lack of adequate knowledge and skills.

The risk involved in innovation was evaluated by the respondents as medium. However, they realized that abandoning of innovation activities has to lead to deteriorated competitiveness in both local and global markets (GORZEŃ-MITKA, 2017).

Table 7 present the examples of benefits of innovation and the risks involved in their implementation. As can be seen, these data contain information about the effect of risk factors connected with innovations on the real estate market.

**Table 7.** Examples of benefits and risk of innovation in the real estate market.

Benefits of innovation	Risks
Meeting customer needs	Lack of acceptance of a product in the market.
Increased profit	Innovation involves high investments which does not necessarily have to be returned during the entire product life cycle.
Increased market share	Too high concentration of resources and comments on new products at the expense of quality and marketing of the current product.
The use of new market opportunities	Enterprise dependence on new products.
Strategic position hedging	Lack of resources for introduction of the product.
Increased competitive advantage	Taking over the enterprise by partners during realization of the investment in partnership (know-how transfer risk).
Local market	Lack of reduction of the marketing risk is possible.
Personal approach to services	
Pressure of the competitors 44%	
Increase share in the market 32%	
Reduction in the harmful effect on the environment 18%	

*Source: Own study based on the survey data and the data from FILO (2011).*

As can be seen, while assessing the risk of innovative activities as medium-level, the respondents emphasized that this risk (28%) is a very important factor that limits this activity. The barriers for implementation of innovations perceived by entrepreneurs in the local market as a risk involved in innovation implementation, include strong competition, lack of financial and human resources and poor distribution channels. When assessing the future activities of the enterprise, 56% of the respondents claimed that they maintained a medium level of innovations in order to minimize the risk of bankruptcy (SITEK, 2016).

The secondary data used in the analysis of innovations and innovative risk, such as data published by PAP (2017), GUS (2007-2013c), MCKINSEY (2015), EUROPEAN INNOVATION SCOREBOARD (EUROPEAN, 2016) and author's own study demonstrated, that one of key tasks is investments in innovativeness of the economy. Furthermore, the report of European Innovation Scoreboard 2016 demonstrated that one of the strengths of Poland is human resources and investments of the enterprises for whom innovativeness represents a key activity to ensure a fast development of Polish economy.

It was also shown (Tables 3 and 7) that in the case of the real estate market, the market risk connected with innovative activities is considered as medium since technical, technological and organizational successes of innovative activity are connected with the increasing innovative success of the product in the market.

## Conclusion

Analysis of the innovative activity and risk involved with this activity was based on the results of the survey concerning the local real estate market in micro- and small enterprises.

The analysis presented in the study showed that in the sector of real estate, the innovative services dominate substantially over the investment activities in the construction sector, thus representing the value added in this sector. In the services in the real estate market, innovations concern in particular marketing, with marketing surveys concerning meeting the customer needs as one of the aspects of combating competition.

Analysis of the barriers of perception of innovations by enterprises in Poland demonstrated low demand for innovative products and services as the major barrier. In the case of public and private support, the key problem of using them was administrative problems in finding the resources. The value added in this case is the necessity to remove this barrier.

It was emphasized that the most important component of the analysis of innovation risk is not to start innovative activity but to be aware that giving up the activity in the longer perspective can lead to the deterioration of the competitiveness.

In conclusion, the risk of the market, which is little transparent and characterized by large variability of conditions, has a substantial effect on the level of risk of innovative activities in the real estate market.

The study confirmed the lead market initiative (LMI), with one of them being sustainable building as a market with innovative potential, conducive to competitiveness and creation of new workplaces in the European economy.

The study presented evaluation of innovations in the real estate market as one of the major determinants of effective economic development. The results supported the thesis that the dominant risk connected with innovations in the real estate market is market risk, considered as medium. It should be assumed that the analysis confirmed the achievement of the study aim and the legitimacy of the assumed thesis.

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